

adapt one of the regular boiler feed pumps so that it can be used on this work, when required, by isolating it for the time being from the remainder of the feed-water system. The best pressure for working the water turbine appears to be about 100 lb. per square inch. Here, also, the water is supplied to the turbine tube cleaner through a flexible hose-pipe, usually

of the rubber armoured type. The turbine is passed down the boiler tube and can be controlled, as to position, as easily as the pneumatic type. The exhaust water washes the dislodged scale away, and this scale is caught in a trough which is placed under the bottom headers of the boiler tubes.

Economizers can be satisfactorily cleaned by using the scraper type of gear. This consists of a steel blade with a cutting edge at each end, mounted on the end of a long rod and kept apart by means of a spring, the spring keeping the cutting edges in contact with the boiler or economizer tube.

The scale can sometimes be removed by steel-wire brushes, mounted on long rods, if the scale is soft enough, but neither scrapers nor brushes are much use where the scale is hard and closely grained.

But "prevention is better than cure" and a hard scale need not be formed if proper boiler water is used.

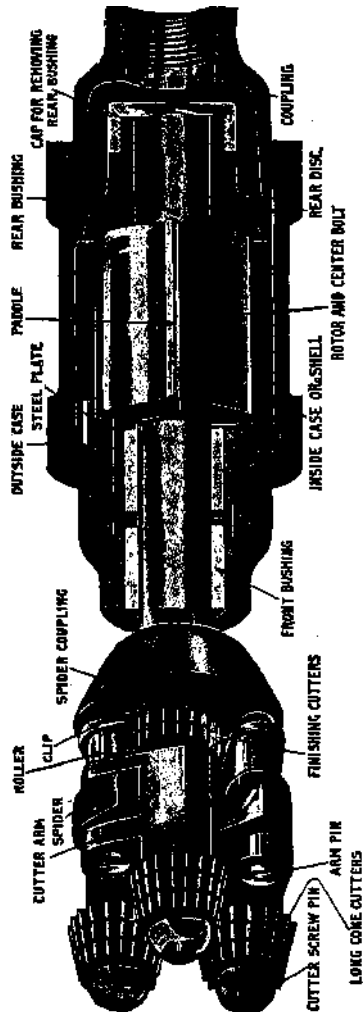


Fig. 10.—General View of Tube Cleaner

Fig. 11.—Cross Section of Boiler-tube



There are many appliances and fluids

on the market for the treatment of boiler feed-water. The claims made for some of these processes and fluids are wonderful and startling. Where a boiler composition is used with the water, the softening of the water naturally takes place in the boiler, and among other functions the boiler serves the turn of a water softener. Now most people will agree that the particular job a boiler is installed for is to raise steam, and not to soften water. It can become a positively dangerous piece of apparatus